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Reconstruction of heterogeneity parameters by reflected field in the wave guided structure

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Abstract

Heterogeneity in plane wave guide sets a connection between traces of potential functions of coming and of reflected waves on a section. It is possible to apply the scanning screen method to reconstruct kernel of the reflection operator in the case when possibilities of measuring equipment are limited. The influence of transversal screen in the wave guided structure on the reflection operator is investigated. It is proposed to use a solution of the auxiliary transmission problem for recalculation of data obtained by measuring characteristics of reflected field. It is shown on simple examples how information on heterogeneity in plane waveguide can be restored by the reflection matrix. The possibility of applying method of neural networks for solving the inverse problem is investigated. Some results of numerical experiment are presented.